

REMARKS

I. Abstract

The abstract was objected to because it included more than one paragraph. A new abstract has been drafted that is less than 150 words according to the word count in the word processor and is a single paragraph and thus complies with U.S. Patent Office Rules. The information regarding the chemicals resistance included in the abstract is on page 9, line 24 to 31 of the specification. The limits for the oxide concentration ranges have been changed in accordance with the embodiments disclosed in Table I and claim 2. These changes are similar to changes made in drafting new independent glass composition claims 10 and 17 and 28.

II. Claim Objections

Claim 6 contained two ranges thermal expansion coefficient within the same claim, leaving doubt regarding claim scope.

Claim 6 has been canceled, obviating this objection. None of the new claims contain a narrow property or concentration range and a broad property or concentration range, thus creating doubt regarding claim scope.

For the foregoing reasons it is respectfully submitted that none of the new claims 10 to 28 should be objected to on this ground.

III. Originally Filed "USE" Claims

The originally filed "use" claims 7 to 9 have been canceled and replaced by claims 24 to 27 for special glasses, specifically an instrument glass, a sealing glass, a pharmaceutical packaging material and an ampoule glass for pharmaceutical applications. The canceled "use" claims as well as disclosures in the specification provide a basis for these new claims 24 to 27.

The new claims 24 to 27 have been drafted as multiple dependent claims. However the form of these multiple dependent claims should be acceptable under the rules for this type of claim because the special glasses are defined as consisting of the borosilicate glass defined in one of claims 10 to 23. Thus none of claims 24 to 27 depend on two other claims simultaneously.

Claims 7 to 9 were rejected as indefinite under 35 U.S.C. 112, second paragraph, for being "use" claims (appearing to be for a method-of-use) but without steps of performing certain process or method actions. This rejection of claims 7 to 9 has of course been obviated by their cancellation. No similar "use" claims have been filed. However instead of method claims new special glass claims 24 to 28 have been filed. Basis for these claims appears especially on page 7 and following in the applicants' specification.

Claims 7 to 9 were rejected under 35 U.S.C. 101 because of recitation of a "use" without setting forth any steps in the process. This rejection of claims 7 to 9 has of course been obviated by their cancellation. It should be clear that the new special glass claims 24 to 28 are statutory and comply with 35 U.S.C. 101.

Independent claim 28 is an independent claim for a preferred embodiment of the pharmaceutical packaging glass, which is free from arsenic oxide, antimony oxide and BaO. Basis for this independent claim appears on page 8, lines 13 to 17, and page 9, lines 24 to 31, as well as canceled claim 9.

IV. Anticipation Rejection based on JP 08-333136

Claims 1 and 3 to 7 were rejected as anticipated under 35 U.S.C. 102(b) by JP 08-333136 A.

New independent claims 10, 17 and 28 have been filed and claims 1 and 3 to 7 have been canceled, obviating their rejection as anticipated. New independent claims 10, 17 and 28 claim glass compositions in which **not all** of the oxide ingredient concentration ranges overlap, touch or within those disclosed in the JP reference.

New claim 10 includes the features of canceled claim 1 as well as the higher lower limit for Na₂O from claim 2 and a new lower limit for Li₂O from example A4 in Table I. Such mixing of concentration range limits in drafting amended claims is acceptable in accordance with M.P.E.P. 2163.05 III.

New claim 17 claims a borosilicate glass with a somewhat narrower Li₂O concentration range and with a greater lower limit of 0.7 for Li₂O in accordance with example A7 of Table I. The same is true of claim 28.

The Derwent abstract for this JP reference discloses an upper limit for Na₂O concentration of 4.3 %, but claims 10, 17 and 19 claim borosilicate glass with a Na₂O concentration range of from 4.5 to 9.5 %. Also claim 10 now

requires at least 0.15 % by weight of Li_2O and claims 17 and 18 require at least 0.7 % by weight of Li_2O . Thus Li_2O is no longer an optional but instead is a required ingredient. These generally higher amounts of these alkali metal oxides are required to reduce the working point of the glasses for economical and easier glass production, as explained on page 5 of the applicants' specification.

Also note that the generally higher amounts of B_2O_3 of the JP reference would result in greater evaporation of alkali metal oxides during processing. It is important for the glasses of the invention that the alkali metal oxide evaporation be reduced as explained in connection with the results of Table II in the specification.

In any case because of the new Na_2O concentration range with the higher lower limit of 4.5 % by weight as set forth in claims 10, 17 and 28, the Na_2O concentration range of the claimed borosilicate glass no longer overlaps, touches or is within the corresponding range for Na_2O in this JP reference. Thus the requirements of M.P.E.P. 2131.01 for anticipation are not satisfied by any of claims 10 to 28.

For the foregoing reasons it is respectfully submitted that **none** of the new claims 10 to 28 should be rejected as anticipated under 35 U.S.C. 102 (b) based on JP 08-333136 A.

V. Anticipation Rejection based on JP 04-074731

Claims 1 to 6, 8 and 9 were rejected as anticipated under 35 U.S.C. 102(b) by JP 04-074731.

New independent claims 10, 17 and 28 have been filed and claims 1 to 6, 8 and 9 have been canceled, obviating their rejection as anticipated.

New claim 10 includes the features of canceled claim 1 as well as the higher lower limit for Na_2O from claim 2 and a new lower limit for Li_2O from example A4 in Table I. Such mixing of concentration range limits in drafting amended claims is acceptable in accordance with M.P.E.P. 2163.05 III.

New claim 17 claims a borosilicate glass with a somewhat narrower Li_2O concentration range and with a greater lower limit of 0.7 for Li_2O in accordance with example A7 of Table I. The same is true of claim 28.

In particular Li_2O is now a required ingredient of applicants' claimed borosilicate glass, but is not disclosed as an ingredient at all in this JP reference. Claim 10 requires a Li_2O concentration range of 0.15 to 2 and claims 17 and 28 require a Li_2O concentration range of 0.7 to 1.5.

Thus all concentration ranges of the claimed borosilicate glass no longer overlap, touch or are within the corresponding ranges in this JP reference. Thus the requirements of M.P.E.P. 2131.01 for anticipation are not satisfied by any of claims 10 to 28, in this case because Li_2O is now a required ingredient of applicants' claimed borosilicate glass.

The importance of Li_2O is discussed on pages 5 and 6 of the specification. Larger amounts of Li_2O help to reduce the working point of the glasses and to provide the desired value of the thermal expansion coefficients, which are part of the desired specification of the new borosilicate glass according to the invention.

For the foregoing reasons it is respectfully submitted that **none** of the new

claims 10 to 28 should be rejected as anticipated under 35 U.S.C. 102 (b) based on JP 04-074731.

VI. Anticipation Rejection based on Moser

Claims 1 to 6, 8 and 9 were rejected as anticipated under 35 U.S.C. 102(b) by U.S. Patent 4,387,164, issued to H.S. Moser ("Moser").

New independent claims 10, 17 and 28 have been filed and claims 1 to 6, 8 and 9 have been canceled, obviating their rejection as anticipated.

New claim 10 includes the features of canceled claim 1 as well as the higher lower limit for Na₂O from claim 2 and a new lower limit (0.15 %) for Li₂O from example A4 in Table I. Such mixing of concentration range limits in drafting amended claims is acceptable in accordance with M.P.E.P. 2163.05 III.

New claim 17 claims a borosilicate glass with a somewhat narrower Li₂O concentration range and with a greater lower limit of 0.7 for Li₂O in accordance with example A7 of Table I. The same is true of claim 28.

In particular Li₂O is now a required ingredient of applicants' claimed borosilicate glass, but is not disclosed as an ingredient at all in Moser. Moser in claim 1 claims a glass consisting essentially of SiO₂, B₂O₃, Al₂O₃, Na₂O, K₂O, CaO and MgO with varying concentration ranges (underlined ingredients are those that are required, i.e. no zero lower concentration range limit). Claim 10 requires a Li₂O concentration range of 0.15 to 2 and claims 17 and 28 require a Li₂O concentration range of 0.7 to 1.5.

Thus all concentration ranges of the claimed borosilicate glass no longer

overlap, touch or are within the corresponding ranges in Moser, because e.g. the range for Li_2O is 0.15 to 2 in applicants' claim 10. Thus the requirements of M.P.E.P. 2131.01 for anticipation are not satisfied by any of claims 10 to 28, in this case because Li_2O is now a required ingredient of applicants' claimed borosilicate glass.

The importance of Li_2O is discussed on pages 5 and 6 of the specification. Larger amounts of Li_2O help to reduce the working point of the glasses and to provide the desired value of the thermal expansion coefficients, which are part of the desired specification of the new borosilicate glass according to the invention.

For the foregoing reasons it is respectfully submitted that **none** of the new claims 10 to 28 should be rejected as anticipated under 35 U.S.C. 102 (b) based on U.S. Patent 4,387,164, issued to H.S. Moser.

VII. Anticipation Rejection based on DE 198 01 861 A1 ("Walther")

Claims 1 to 9 were rejected as anticipated under 35 U.S.C. 102(b) by DE 198 01 861 A1; inventors, Walther, et al.

U. S. Patent 6,200,659 B1 is the U.S. equivalent of DE 198 01 861 A1 because that DE reference is its priority document.

New Independent claims 10, 17 and 28 have been filed and claims 1 to 9 have been canceled, obviating their rejection as anticipated.

New claim 10 includes the features of canceled claim 1 as well as the higher lower limit for Na_2O from claim 2 and a new lower limit (0.15 %) for Li_2O from example A4 in Table I. Such mixing of concentration range limits in drafting

amended claims is acceptable in accordance with M.P.E.P. 2163.05 III.

New claim 17 claims a borosilicate glass with a somewhat narrower Li_2O concentration range and with a greater lower limit of 0.7 for Li_2O in accordance with example A7 of Table I. The same is true of claim 28.

In particular Li_2O is now a **required** ingredient of applicants' claimed borosilicate glass, but is not disclosed as an ingredient at all in Walther, et al. Walther, et al, only disclose glass compositions in Table I in column 2. The listed glass compositions do not include Li_2O , only SiO_2 , B_2O_3 , Al_2O_3 , Na_2O , K_2O , CaO , BaO and MgO with varying concentration ranges (underlined ingredients are those that are required, i.e. no zero lower concentration range limit). Claim 10 requires a Li_2O concentration range of 0.15 to 2 and claims 17 and 28 require a Li_2O concentration range of 0.7 to 1.5.

Thus all concentration ranges of the claimed borosilicate glass no longer overlap, touch or are within the corresponding ranges in Walther, et al, because e.g. the range for Li_2O is 0.15 to 2 in applicants' claim 10. Thus the requirements of M.P.E.P. 2131.01 for anticipation are not satisfied by any of claims 10 to 28, in this case because Li_2O is now a required ingredient of applicants' claimed borosilicate glass.

The importance of Li_2O is discussed on pages 5 and 6 of the specification. Larger amounts of Li_2O help to reduce the working point of the glasses and to provide the desired value of the thermal expansion coefficients, which are part of the desired specification of the new borosilicate glass according to the invention.

For the foregoing reasons it is respectfully submitted that **none** of the new

claims 10 to 28 should be rejected as anticipated under 35 U.S.C. 102 (b) based on DE 198 01 861 A1; inventors, Walther, et al.

VIII. Anticipation Rejection based on U.S. Patent 3,984,252 "Kiefer"

Claims 1 to 9 were rejected as anticipated under 35 U.S.C. 102(b) by U. S. Patent 3,984,252, issued to W. Kiefer.

New independent claims 10, 17 and 28 have been filed and claims 1 to 9 have been canceled, obviating their rejection as anticipated.

New claim 10 includes the features of canceled claim 1 as well as the higher lower limit for Na₂O from claim 2 and a new lower limit (0.15 %) for Li₂O from example A4 in Table I. Such mixing of concentration range limits in drafting amended claims is acceptable in accordance with M.P.E.P. 2163.05 III,

New claim 17 claims a borosilicate glass with a somewhat narrower Li₂O concentration range and with a greater lower limit of 0.7 for Li₂O in accordance with example A7 of Table I. The same is true of claim 28.

In particular Li₂O is now a required ingredient of applicants' claimed borosilicate glass, but is not disclosed as a required ingredient at all in Kiefer. Kiefer, et al, disclose glass compositions in column 5 and claim 15 of 0 to 0.5 %. Thus Li₂O is only an optional ingredient in the glass of Kiefer (also consult claim 16 for glass that does not include this alkali metal oxide). Since the concentration range for Li₂O according to claims 17 and 28 is 0.7 to 1.5 % by weight, claims 17 to 28 are clearly no longer anticipated by Kiefer, et al.

Thus all concentration ranges of the claimed borosilicate glass of claims

17 to 28 no longer overlap, touch or are within the corresponding ranges in the disclosed glass compositions of Kiefer, et al, because e.g. the range for Li_2O is 0.7 to 1.5. Thus the requirements of M.P.E.P. 2131.01 for anticipation are not satisfied by any of claims 17 to 28, in this case because Li_2O is now a required ingredient of applicants' claimed borosilicate glass with a range that no longer overlaps that of the reference.

The importance of larger amounts of Li_2O is discussed on pages 5 and 6 of the specification. Larger amounts of Li_2O help to reduce the working point of the glasses and to provide the desired value of the thermal expansion coefficients, which are part of the desired specification of the new borosilicate glass according to the invention.

Furthermore as to claim 10 with the overlapping range for Li_2O only the applicants' claimed glasses of claim 10 will have the desired higher thermal expansion coefficients of ($\alpha_{20/300}$) equal to $5.05 \times 10^{-6}/\text{K}$ to $6.0 \times 10^{-6}/\text{K}$ and the desired working point range of at most 1180°C according to dependent claim 23.

For the foregoing reasons it is respectfully submitted that **none** of the new claims 10 to 28 should be rejected as anticipated under 35 U.S.C. 102 (b) based on U. S. Patent 3,984,252, issued to W. Kiefer.

IX. Reasons for Allowance of Claims 10 to 28

The claimed glasses have been demonstrated to be exceptional by the quantitative characterization of alkali metal evaporation during processing. They have excellent melting and processing properties including lower working point


and large "length" (claims 16 and 23), which results in economical production. They have exceptionally good chemicals resistance, including hydrolytic stability, acid and lye resistance. The prior art references do not mention all these improved properties, especially the processing and melting properties.

The particular distinguishing features of the claimed glass compositions related to the comparatively high minimum amounts of alkali metal oxides in accordance with new claims 10, 17 and 28 help to provide the good melting and processing properties, including low working point and thermal expansion properties. The advantageous contributions of the other ingredients to the improved properties of the borosilicate glass, especially for pharmaceutical applications, are explained on pages 5 and following of applicants' specification. Especially note that dependent claims 11, 12, 14 and 15 provide special advantages for pharmaceutical packaging applications.

Should the Examiner require or consider it advisable that the specification, claims and/or drawing be further amended or corrected in formal respects to put this case in condition for final allowance, then it is requested that such amendments or corrections be carried out by Examiner's Amendment and the case passed to issue. Alternatively, should the Examiner feel that a personal discussion might be helpful in advancing the case to allowance, he or she is invited to telephone the undersigned at 1-631-549 4700.

In view of the foregoing, favorable allowance is respectfully solicited.

Respectfully submitted,



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